

**ICF International / Laboratory Data Consultants**

Environmental Services Assistance Team, Region 9
1337 South 46th Street, Building 201, Richmond, CA 94804-4698
Phone: (510) 412-2300 Fax: (510) 412-2304

MEMORANDUM

TO: Chris Lichens, Remedial Project Manager
Site Cleanup Section 4, SFD-7-4

THROUGH: Rose Fong, ESAT Task Order Manager (TOM) *RF*
Quality Assurance (QA) Program, MTS-3

FROM: Doug Lindelof, Data Review Task Manager *DL*
Region 9 Environmental Services Assistance Team (ESAT)

ESAT Contract No.: EP-W-06-041
Technical Direction Form No.: 00105077 Amendment 3

DATE: October 8, 2007

SUBJECT: Review of Analytical Data, Tier 3

Attached are comments resulting from ESAT Region 9 review of the following analytical data:

Site:	Omega Chem OU2
Site Account No.:	09 BC LA02
CERCLIS ID No.:	CAD042245001
Case No.:	36520
SDG No.:	MY3CJ2
Laboratory:	Bonner Analytical Testing Co. (BONNER)
Analysis:	CLP Dissolved Metals by ICP-MS and Cyanide
Samples:	20 Groundwater Samples (see Case Summary)
Collection Date:	July 9 through 13, 2007
Reviewer:	Stan Kott, ESAT/Laboratory Data Consultants

This report has been reviewed by the EPA TOM for the ESAT contract, whose signature appears above.

If there are any questions, please contact Rose Fong (QA Program/EPA) at (415) 972-3812.

Attachment

cc: Cynthia Gurley, CLP PO USEPA Region 4
Steve Remaley, CLP PO USEPA Region 9

CLP PO: [X] FYI Action

SAMPLING ISSUES: [X] Yes No

00105077-8418/365820/MY3CJ2RPT.doc

Data Validation Report

Case No.: 36520
SDG No.: MY3CJ2
Site: Omega Chem OU2
Laboratory: Bonner Analytical Testing Co. (BONNER)
Reviewer: Stan Kott, ESAT/LDC
Date: October 8, 2007

I. CASE SUMMARY

Sample Information

Samples: MY3CJ1 through MY3CJ5, MY3CJ7 through MY3CJ9, MY3CK0, MY3CK2 through MY3CK5, MY3CK7 through MY3CK9, MY3CL0, MY3CL1, MY3CL3, and MY3CL7
Concentration and Matrix: Low Concentration Groundwater
Analysis: CLP Dissolved Metals by ICP-MS and Cyanide
SOW: ILM05.4
Collection Date: July 9 through 13, 2007
Sample Receipt Date: July 11 through 14, 2007
Preparation Date: July 17, 2007
Analysis Date: July 17 and 23, 2007

Field QC

Field Blanks (FB): Not Provided
Equipment Blanks (EB): Not Provided
Background Samples (BG): Not Provided
Field Duplicates (D1): MY3CJ4 and MY3CJ5
Field Duplicates (D2): MY3CK9 and MY3CL0

Laboratory QC

Method Blank & Associated Samples: Preparation Blank-Water (PBW) and samples listed above
Matrix Spike: MY3CK2S
Duplicates: MY3CK2D
ICP Serial Dilution: MY3CK2L
Analysis: CLP Dissolved Metals by ICP-MS and Cyanide

<u>Analyte</u>	<u>Sample Preparation and Digestion Date</u>	<u>Analysis Date</u>
ICP-MS Metals	July 17, 2007	July 23, 2007
Cyanide	July 17, 2007	July 17, 2007
Percent Solids	Not Applicable	Not Applicable

CLP PO Action

None.

Sampling Issues

1. The laboratory indicated that temperature indicator bottles were not provided in two sample coolers. The laboratory used a thermometer to determine the cooler temperatures to be 0.1°C and 0.6°C. Although these temperatures are outside the 4°C±2°C limit, no adverse effect on data quality is expected.
2. The laboratory indicated that the labels on the sample bottles incorrectly identified the nitric acid preservative as HNO₂. The laboratory indicated that the pH was within the method limit of less than two. No adverse effect on data quality is expected.

Additional Comments

The laboratory indicated that the MY3CJ3 metals sample was transshipped from the USEPA Region 9 laboratory. No adverse effect on data quality is expected.

All method requirements specified in the EPA Contract Laboratory Program (CLP) Inorganic Statement of Work (SOW), except as noted, have been met.

Analytical results are listed in Table 1A with qualifications. Definitions of data qualifiers used in Table 1A are listed in Table 1B.

This report was prepared in accordance with the following documents:

- Region 9 Standard Operating Procedure 906, *Guidelines for Data Review of Contract Laboratory Program Analytical Services (CLPAS) Inorganic Data Packages*;
- USEPA Contract Laboratory Program Statement of Work For Inorganic Analysis Multi-Media, Multi-Concentration ILM05.3, March 2004;
- *ILM05.3 to ILM05.4 Summary of Changes*, December 1, 2006; and
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, October 2004.

II. VALIDATION SUMMARY

The data were evaluated based on the following parameters:

	<u>Parameter</u>	<u>Acceptable</u>	<u>Comment</u>
1.	Data Completeness	Yes	
2.	Sample Preservation and Holding Times	Yes	
3.	Calibration	Yes	
	a. Initial		
	b. Initial and Continuing Calibration Verification		
	c. CRQL Check Standard (CRI)		
	d. ICP-MS Tuning Analysis		
4.	Blanks	No	B,C
5.	ICP Interference Check Sample (ICS)	Yes	
6.	Laboratory Control Sample (LCS)	Yes	
7.	Duplicate Sample Analysis	Yes	
8.	Matrix Spike Sample Analysis	Yes	
9.	ICP Serial Dilution Analysis	Yes	
10.	ICP-MS Internal Standards	Yes	
11.	Field Duplicate Sample Analysis	Yes	
12.	Sample Quantitation	Yes	A
13.	Overall Assessment	Yes	

N/A = Not Applicable

III. VALIDITY AND COMMENTS

- A. Results above the method detection limit (MDL) but below the contract required quantitation limit (CRQL) (denoted with an "L" qualifier) are estimated and flagged "J" in Table 1A.

Results above the MDL but below the CRQL are considered qualitatively acceptable but quantitatively unreliable due to uncertainties in the analytical precision near the limit of quantitation.

- B. The following results are qualified as estimated high and flagged "J+" or reported non-detected "U" in Table 1A due to preparation blank contamination.

- Zinc in samples MY3CJ1, MY3CJ3, MY3CJ4, MY3CJ5, MY3CJ7, MY3CJ8, MY3CJ9, MY3CK0, MY3CK2 through MY3CK5, MY3CK7, MY3CK8, MY3CK9, MY3CL0, MY3CL1, MY3CL3, and MY3CL7

Sample results greater than the CRQL are qualified as estimated high (J+) unless the concentration of zinc in the sample exceeds 5 times the amount in any associated blank. Sample results greater than or equal to the MDL but less than or equal to the CRQL are reported as non-detected (U) at the CRQL.

The reported result of 2.4 µg/L for zinc in preparation blank sample PBW1 exceeded the 2.0 µg/L CRQL.

A preparation blank is an analytical control that contains distilled, deionized water, or baked sand for solid matrices, and reagents, which is carried through the entire analytical procedure. The preparation blank is used to determine the level of contamination introduced by the laboratory during preparation and analysis.

- C. The following results are reported as non-detected (U) in Table 1A due to low level continuing calibration blank (CCB) contamination.

- Antimony in samples MY3CJ1, MY3CJ2, MY3CJ3, MY3CK0, MY3CK5, MY3CK7, and MY3CL1
- Arsenic in sample MY3CK2, MY3CK3, MY3CK5, MY3CK7, and MY3CK8
- Cadmium in samples MY3CJ1 through MY3CJ5, MY3CJ8, MY3CJ9, MY3CK0, MY3CK3, MY3CK4, MY3CK5, MY3CL1, MY3CL3, and MY3CL7
- Chromium in samples MY3CJ1, MY3CJ8, MY3CK2, MY3CK7, MY3CK8, MY3CK9, MY3CL0, MY3CL1, and MY3CL7
- Cobalt in samples MY3CJ7, MY3CJ8, MY3CK2, MY3CK7, and MY3CK8
- Silver in samples MY3CK5 and MY3CL3
- Thallium in samples MY3CJ1 through MY3CJ5, MY3CJ7, MY3CK0, MY3CK3, MY3CK4, MY3CK5, MY3CK7, and MY3CL0
- Vanadium in sample MY3CK0, MY3CK2, MY3CK4, MY3CK5, MY3CL1, and MY3CL7

Analyte amounts greater than the MDL but less than the CRQL were found in several blanks at the concentrations listed below.

Analyte	Run 1 Blank	Run 2 Blank	Concentration, $\mu\text{g/L}$
Antimony	CCB2	CCB1	0.88 and 0.96
Arsenic	CCB3	CCB2	0.30 and 0.36
Cadmium	CCB2	CCB2	0.029 and 0.045
Chromium	CCB2	CCB2	0.20 and 0.26
Cobalt	CCB2	CCB2	0.025 and 0.042
Silver	---	CCB2	0.018
Thallium	CCB1	CCB2	0.081 and 0.14
Vanadium	CCB3	CCB2	0.82 and 0.57

Affected sample results greater than or equal to the MDL but less than the CRQL are reported as non-detected (U) at the respective CRQL.

A continuing calibration blank (CCB) consists of deionized, distilled water and reagents. It is analyzed after the continuing calibration verification (CCV) standard, at a frequency of every 10 samples and at the end of the analytical run to monitor analyte carry-over.

Case No.: 36520

SDG No.: MY3CJ2

Site : OMEGA RECOVERY SERV.

Lab : BONNER ANALYTICAL TESTING Co. (BONNER)

Reviewer : Stan Kott, ESAT/LDC

Date : October 8, 2007

ANALYTICAL RESULTS

Table 1A

Station Location : MY3CJ1

Sample ID : MY3CJ1

Collection Date : 7/9/2007

Concentration in ug/L

Analysis Type : Low Concentration Groundwater Samples
for CLP Dissolved Metals by ICP-MS
and Cyanide

PARAMETER	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com				
ANTIMONY	2.0U	C	2.0U	C	2.0U	C	2.0U	C	2.0U	2.0U	C	2.0U	2.0U	C	2.0U	2.0U	C	2.0U	2.0U	C	2.0U	2.0U	C	2.0U	2.0U			
ARSENIC	2.5			2.6			3.2			1.7			1.9			1.9			2.2			2.2			2.2			
BARIUM	23.0			21.6			22.5			35.6			35.8			35.8			20.1			20.1			20.1			
BERYLLOM	1.0U	C	1.0U	C	1.0U	C	1.0U	C	1.0U	1.0U	C	1.0U	1.0U	C	1.0U	1.0U	C	1.0U	1.0U	C	1.0U	1.0U	C	1.0U	1.0U			
CADMIUM	1.0U	C	1.0U	C	1.4L	J	1.6L	J	A	3.1	A	3.1	A	3.1	A	3.1	A	3.1	A	3.1	A	3.1	A	3.1	A	3.1		
CHROMIUM	2.0U	C	2.0U	C	0.26L	J	0.27L	J	A	0.35L	J	0.35L	J	0.35L	J	0.35L	J	0.35L	J	0.35L	J	0.35L	J	0.35L	J	0.35L		
COBALT	0.28L	J	0.28L	J	0.45L	J	0.64L	J	A	0.46L	J	0.46L	J	0.46L	J	0.46L	J	0.46L	J	0.46L	J	0.46L	J	0.46L	J	0.46L		
COPPER	2.7																											
LEAD	1.0U			1.0U			1.0U			1.0U			1.0U			1.0U			1.0U			1.0U			1.0U			
MANGANESE	88.5			47.4			63.0			56.8			57.0			57.0			2.9			2.9			2.9			
NICKEL	2.2			1.1			2.1			1.8			1.8			1.8			0.43L			0.43L			0.43L			
SELENIUM	5.2			8.5			8.9			4.5L			4.7L			4.7L			J			J			J			
SILVER	0.028L	J	0.028L	J	A	1.0U			1.0U			1.0U			1.0U			A			A			A				
THALLIUM	1.0U	C	1.0U	C	6.6			C	1.0U		C	1.0U		C	1.0U		C	1.0U		C	1.0U		C	1.0U		C		
VANADIUM	6.9	J+	6.9	J+	B	42.8			6.2			7.3	J+	B	2.4	J+	B	2.4	J+	B	2.4	J+	B	2.4	J+	B		
ZINC	5.9																											
CYANIDE	6.7L	J	6.7L	J	A	10.0U			3.3L	J	A	10.0U			10.0U			10.0U			10.0U			10.0U				

Val - Validity. Refer to Data Qualifiers in Table 1B.

Com - Comments. Refer to the Corresponding Section in the Narrative for each letter.

MDL - Method Detection Limit

N/A - Not Applicable

NA - Not Analyzed

D1, D2, etc. - Field Duplicate Pairs

FB - Field Blank, EB - Equipment Blank,

TB - Trip Blank, BG - Background Sample

CRQL - Contract Required Quantitation Limit

Case No. : 36520

SDG No. : MY3CJ2

Site : OMEGA RECOVERY SERV.

Lab : BONNER ANALYTICAL TESTING Co. (BONNER)

Reviewer : Stan Kott, ESAT/LDC

Date : October 8, 2007

ANALYTICAL RESULTS
Table 1A

QUALIFIED DATA
Concentration in ug/L

PARAMETER	Result			Val			Com			Result			Val			Com			Result			Val			
	Y3CJ8	Y3CJ9	MY3CJ9	Y3CK0	Y3CK0	MY3CK0	Y3CK2	Y3CK2	MY3CK2	Y3CK3	Y3CK3	MY3CK3	Y3CK4	Y3CK4	MY3CK4	Y3CK4	Y3CK4	MY3CK4	Y3CK4	Y3CK4	MY3CK4	Y3CK4	Y3CK4	MY3CK4	
ANTIMONY	2.0U		2.0U				2.0U		C	2.0U			2.0U			2.0U			2.0U			2.0U			
ARSENIC	3.3		2.0				1.0			1.0U			C	1.0U			C	1.0U		C	1.0U		C	1.0U	
BARIUM	22.7		47.3				42.1			1.0U			65.4			65.3			1.0U			1.0U			
BERYLLIUM	1.0U		1.0U				C	1.0U		C	1.0U		C	1.0U			C	1.0U		C	1.0U		C	1.0U	
CADMIUM	1.0U		C				10.4			28.8			2.0U			C	9.1						51.9		
CHROMIUM	2.0U		C																						
COBALT	1.0U		C				J	A	0.31L	J	A	1.0U			C	0.24L		J	A	0.33L	J	A	0.41L	J	A
COPPER	0.21L		J				A	1.0L	J	A	0.42L	J	A	0.24L	J	A	0.38L	J	A	0.41L	J	A	0.41L	J	A
LEAD	1.0U		1.0U																						
MANGANESE	13.4		14.3				11.6			25.7															
NICKEL	0.53L	J	A	1.9			1.9			0.26L	J	A	1.2												
SELENIUM	5.4		12.5				10.2			5.0U			20.0												
SILVER	1.0U		1.0U				1.0U			1.0U			1.0U			1.0U			1.0U			1.0U			
THALLIUM	1.0U		1.0U				1.0U			C	1.0U		C	1.0U			C	1.0U		C	1.0U		C	1.0U	
VANADIUM	8.2		5.4				5.0U			C	5.0U		C	6.1			C	6.1		C	5.0U		C	5.0U	
ZINC	7.4	J+	B	3.9			B			B			B	2.0U			B	3.7	J+	B	3.8	J+	B	10.0U	
CYANIDE				10.0U			10.0U							10.0U											

Val - Validity. Refer to Data Qualifiers in Table 1B.

Com - Comments. Refer to the Corresponding Section in the Narrative for each letter.

MDL - Method Detection Limit

N/A - Not Applicable NA - Not Analyzed

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CRQL - Contract Required Quantitation Limit

Case No. : 36520

SDG No. : MY3CJ2

Site : OMEGA RECOVERY SERV.

Lab : BONNER ANALYTICAL TESTING Co. (BONNER)

Reviewer : Stan Kott, ESAT/LDC

Date : October 8, 2007

ANALYTICAL RESULTS

Table 1A

QUALIFIED DATA
Concentration in ug/L

PARAMETER	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	
ANTIMONY	2.0U	C	2.0U	C	2.0U	C	2.0U	2.7		2.0U	2.7		2.0U	2.7		2.0U	2.7		2.0U
ARSENIC	1.0U	C	1.0U	C	1.0U	C	1.0U	212		1.0U	75.2		1.0U	75.2		1.0U	75.2		1.0U
BARIUM	46.6		138		1.0U		1.0U			1.0U			1.0U			1.0U			1.0U
BERYLLIUM	1.0U	C	1.0U	C	1.0U	C	1.0U			1.0U			1.0U			1.0U			1.0U
CADMIUM	1.0U		2.0U		2.0U		2.0U			2.0U			2.0U			2.0U			2.0U
CHROMIUM	33.3		1.0U		1.0U		1.0U			1.0U			1.0U			1.0U			1.0U
COBALT	0.39L	J	A	0.20L	J	A	0.33L	J	A	0.23L	J	A	0.22L	J	A	0.56L	J	A	0.42L
COPPER	0.56L	J	A	1.0U			1.0U			1.0U			1.0U			1.0U			1.0U
LEAD	1.0U		1.0U		1.0U		1.0U			1.0U			1.0U			1.0U			1.0U
MANGANESE	10.1		101		48.6		344			344			339			339			339
NICKEL	2.8		0.32L	J	A	0.37L	J	A	2.2			2.0			2.0			2.0	
SELENIUM	8.6		5.0U		5.0U		5.0U			5.0U			5.0U			5.0U			5.0U
SILVER	1.0U	C	1.0U		1.0U		1.0U			1.0U			1.0U			1.0U			1.0U
THALLIUM	1.0U	C	1.0U	C	1.0U	C	1.0U			1.0U			1.0U			1.0U			1.0U
VANADIUM	5.0U	C	5.0U		5.0U		5.0U			5.0U			5.0U			5.0U			5.0U
ZINC	2.3	J+	B	2.0U			3.9	J+	B	2.6	J+	B	3.7	J+	B	9.8	J+	B	10.0U
CYANIDE	3.1L	J	A	10.0U			10.0U			10.0U			10.0U			10.0U			10.0U

Val - Validity. Refer to Data Qualifiers in Table 1B.

Com - Comments. Refer to the Corresponding Section in the Narrative for each letter.

MDL - Method Detection Limit

N/A - Not Applicable NA - Not Analyzed

Val - Validity. Refer to Data Qualifiers in Table 1B.

D1, D2, etc. - Field Duplicate Pairs

FB - Field Blank, EB - Equipment Blank,

TB - Trip Blank, BG - Background Sample

CRQL - Contract Required Quantitation Limit

Case No. : 36520 SDG No. : MY3CJ2
 Site : OMEGA RECOVERY SERV.
 Lab : BONNER ANALYTICAL TESTING Co. (BONNER)
 Reviewer : Stan Kott, ESAT/LDC
 Date : October 8, 2007

ANALYTICAL RESULTS
Table 1A

Analysis Type : Low Concentration Groundwater Samples
 for CLP Dissolved Metals by ICP-MS
 and Cyanide

Station Location : Y3CL3				Y3CL7				MDL				CRQL			
Sample ID : MY3CL3				MY3CL7				Result				Result			
Collection Date : 7/13/2007				7/13/2007				Val	Com	Val	Com	Val	Com	Val	Com
PARAMETER	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com	Result	Val	Com
ANTIMONY	2.0U			2.0U			0.27			2.0					
ARSENIC	1.4			1.3			0.07			1.0					
BARIUM	46.8			59.6			0.1			10.0					
BERYLLOM	1.0U			1.0U			0.032			1.0					
CADMIUM	1.0U			C			0.01			1.0					
CHROMIUM	24.0			2.0U			C			0.06					
COBALT	0.25L	J	A	0.50L	J	A	0.011			1.0					
COPPER	0.53L	J	A	0.62L	J	A	0.20			2.0					
LEAD	1.0U			1.0U			0.18			1.0					
MANGANESE	26.5			594			0.055			1.0					
NICKEL	1.6			1.9			0.16			1.0					
SELENIUM	4.4L	J	A	8.3			0.27			5.0					
SILVER	1.0U			C			0.012			1.0					
THALLIUM	1.0U			1.0U			0.012			1.0					
VANADIUM	3.3L	J	A	5.0U			C			5.0					
ZINC	4.0	J+	B	5.2	J+	B	0.34			2.0					
CYANIDE	10.0U			3.5L			3.0			10.0					

Val - Validity. Refer to Data Qualifiers in Table 1B.

Com - Comments. Refer to the Corresponding Section in the Narrative for each letter.

MDL - Method Detection Limit

N/A - Not Applicable NA - Not Analyzed

D1, D2, etc. - Field Duplicate Pairs

FB - Field Blank, EB - Equipment Blank,

TB - Trip Blank, BG - Background Sample

CRQL - Contract Required Quantitation Limit

TABLE 1B
DATA QUALIFIER DEFINITIONS FOR INORGANIC DATA REVIEW

The definitions of the following qualifiers are prepared in accordance with the document *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*, October 2004.

- U** The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
- J** The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
- J+** The result is an estimated quantity, but the result may be biased high.
- J-** The result is an estimated quantity, but the result may be biased low.
- R** The data are unusable. The sample results are rejected due to serious deficiencies in meeting Quality Control (QC) criteria. The analyte may or may not be present in the sample.
- UJ** The analyte was analyzed for, but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.

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